Lab # 3

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CPSC 1150 - 003

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Lab Title: Bank Account Lab

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Department: CPSC

Program Bank Account

File Name: Lab3.java

Purpose: outputs the amount of years and months that it takes to deplete the account when taking the interest and expense to account

Input: Initial balance

Output: Years and months it takes until the account depletes

Technical Information:

(You should fill the following information based on compiler and computer you are using).

Compiler: IntelliJ IDEA Community Edition 2023.1.1

Computer: (R) Core(TM) i7-10870H CPU @ 2.20GHz 2.21 GHz, 16 GB of RAM

Operating System: Windows 10 Home Single Language

Language: Java

Program Logic (Pseudocode)

Algorithm: How many years and months it takes to deplete an account with a given initial balance and interest rate.

(definition)

0.1 iBalance: the intial balace of the account

0.2 interestRate: interst rate per month

0.3 interest applies at the end of each month

0.4 balance : the balance that gets updated each month

START

1. SET interestRate 🡨 0.06/12
2. SET expense 🡨 500
3. SET months 🡨 0
4. OUTPUT “What is the initial balance?”
5. SET iBalance 🡨 INPUT
6. balance 🡨 iBalance \* (1 + interestRate)
7. IF (balance-expense >= iBalance)

OUTPUT “The account balance will never deplete.”

ELSE

1. WHILE (balance >= 0)

balance 🡨 balance – expense

balance 🡨 balance \* (1 + interestRate)

INCREMENT months

1. SET years 🡨 months/12
2. IF (years > 0)

months 🡨 months % 12

OUTPUT years + “ years and “ + months + “ months.”

ELSE

1. OUTPUT months + “ months.”

END

END

Generate your test cases based on the specifications in your lab assignment. Follow following format for each test case: (Refer to external document of your first lab)

*purpose*

*input*

*output*

*expected value*

*passed or failed*

Test Cases:

Test Case 1: The months is less than 12 (years = 0)

iBalance = 500

Output: 2 month(s)

Expected Value: 2 month(s)

Passed

Test Case 2: The months is more than 12 (years > 0)

iBalance = 6000

Output: 1 years and 1 month(s)

Expected Value: 1 years and 1 month(s)

Passed

Test Case 2: The account never depletes

iBalance = 1000000

Output: The account will never deplete.

Expected Value: The account will never deplete.

Passed